PATENT COOPERATION TREATY

# PCT



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

**(PCT Article 36 and Rule 70)**

| Applicant's or agent's file reference | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
|---|---|---|
| 000457WO | | |
| International application No. | International filing date (day/month/year) | Priority date (day/month/year) |
| PCT/US03/01542 | 16 January 2003 (16.01.2003) | 23 January 2002 (23.01.2002) |

International Patent Classification (IPC) or national classification and IPC

IPC(7): H04B 7/02, 7/08 and US CL.: 455/67.1,423,501; 370/336

Applicant

QUALCOMM INCORPORATED

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

| Date of submission of the demand | Date of completion of this report |
|---|---|
| 07 August 2003 (07.08.2003) | 30 August 2004 (30.08.2004) |
| Name and mailing address of the IPEA/US<br>Mail Stop PCT, Attn: IPEA/US<br>Commissioner for Patents<br>P.O. Box 1450<br>Alexandria, Virginia 22313-1450<br>Facsimile No. (703)305-3230 | Authorized officer<br>Eugene Yun<br>Telephone No. (703) 305-2689 |

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/01542

## I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed.

☒ the description:
pages 1-23 as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the claims:
pages 24-29, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☒ the drawings:
pages 1-7, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

☐ the sequence listing part of the description:
pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____.

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages NONE
☐ the claims, Nos. NONE
☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

** Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

*** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

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**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. STATEMENT

| | | |
|---|---|---|
| Novelty (N) | Claims 4, 5, 18, and 23 | YES |
| | Claims 1-3, 6-17, 19-22, and 24-27 | NO |
| Inventive Step (IS) | Claims NONE | YES |
| | Claims 1-27 | NO |
| Industrial Applicability (IA) | Claims 1-27 | YES |
| | Claims NONE | NO |

2. CITATIONS AND EXPLANATIONS
Please See Continuation Sheet

Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Claims 1-3, 6-17, 19-22, and 24-27 lack novelty under PCT Article 33(2) as being anticipated by Keskitalo (US 5,920,553).

Referring to Claim 1, Keskitalo teaches a method in a wireless communication system for selectively combining a plurality of received transmissions to recover a message comprised of a plurality of frames, the method comprising:

Processing each of the plurality of transmissions separately to receiver the message (see col. 5, lines 45-53); and

If the message cannot be recovered error-free from a single transmission,

Determining erased frames in a message recovered from a first transmission (see col. 5, lines 37-40),

Determining good frames recovered from remaining ones of the plurality of transmissions (see col. 5, lines 30-35),

Forming at least one combined message, wherein each combined message includes a particular combination of good frames substituting for the erased frames (see col. 5, lines 35-40), and

Checking each combined message to determine whether it is good or erased (see ABSTRACT).

Claims 19, 26, and 27 have similar limitations as Claim 1.

Referring to Claim 2, Keskitalo also teaches the first transmission having the highest signal quality among the plurality of transmissions (see col. 5, lines 41-44).

Referring to Claim 3, Keskitalo also teaches checking each frame in the message recovered from the first transmission and marking each frame failing the checking as an erased frame (see col. 5, lines 37-40).

Referring to Claim 6, Keskitalo also teaches identifying each erased frame in the message recovered from the first transmission (see col. 5, lines 37-40), identifying a good frame from one of the plurality of transmissions corresponding to each erased frame (see col. 5, lines 30-35) and substituting each erased frame with the corresponding good frame to form the combined message (see col. 5, lines 35-40).

Referring to Claim 7, Keskitalo also teaches the good frame corresponding to each erased frame identified based on a frame number associated with each frame (see col. 6, lines 57-60).

Referring to Claim 8, Keskitalo also teaches identifying a plurality of combinations of good frames for the erased frames in the message recovered from the first transmission and substituting each combination of good frames for the erased frames to form a respective combined message (see col. 5, lines 30-40).

Referring to Claim 9 and 21, Keskitalo also teaches combining symbols for two or more frames from two or more transmissions corresponding to the erased frame and decoding the combined symbols to derive a good frame for the erased frame (see col. 5, lines 45-53).

Referring to Claim 10, Keskitalo also teaches ranking the plurality of transmissions and wherein symbols for frames corresponding to the erased frames are combined in a particular order determined based on the ranking of the plurality of transmissions (see col. 5, lines 41-44).

Referring to Claim 11, Keskitalo also teaches the plurality of transmissions ranked based on signal quality (see col. 5, lines 41-44).

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Supplemental Box
(To be used when the space in any of the preceding boxes is not sufficient)

Referring to Claim 12, Keskitalo also teaches weighting symbols for each of the two or more frames corresponding to the erased frame based on a respective weight determined based on the signal quality of the two or more transmissions from which the two or more frames are recovered and wherein the weighted symbols are combined (see col. 5, lines 41-44).

Referring to Claim 13, Keskitalo also teaches each transmission from a respective signal source (see ABSTRACT).

Referring to Claim 14 and 25, Keskitalo also teaches each transmission a forward link signal from a respective base station in a CDMA system (see ABSTRACT).

Referring to Claim 15, Keskitalo also teaches the plurality of received transmissions are approximately synchronous (see col. 4, lines 66-67 and col. 5, lines 1-2).

Referring to Claim 16, Keskitalo also teaches the plurality of received transmissions are approximately asynchronous (see col. 4, lines 66-67 and col. 5, lines 1-2).

Referring to Claim 17 and 24, Keskitalo also teaches the message to be recovered error-free as a page message (see col. 3, lines 49-51).

Referring to Claim 20, Keskitalo also teaches a frame buffer to store good frames recovered from the plurality of symbol streams (see col. 5, lines 30-35).

Referring to Claim 22, Keskitalo also teaches a symbol buffer to store symbols corresponding to each erased frame in the message recovered from the first symbol system (see col. 5, lines 36-39).

Claims 4, 5, 18 and 23 lack an inventive step under PCT Article 33(3) as being obvious over Keskitalo in view of Alamara (US 6,286,122).

Referring to Claim 18, Keskitalo teaches a method in a CDMA communication system for selectively combining a plurality of non-synchronous forward link transmissions to recover a page message comprised of a plurality of frames, the method comprising:

Processing each of the plurality of transmissions separately to recover the page message (see col. 5, lines 45-53); and

if the page message cannot be recovered error-free from a single transmission,

Determining erased frames in a message recovered from a first transmission (see col. 5, lines 37-40),

Determining good frames recovered from remaining ones of the plurality of transmissions (see col. 5, lines 30-35).

Forming a combined message, by substituting each erased frame with a corresponding good frame (see col. 5, lines 35-40), and

Checking each combined message to determine whether it is good or erased (see ABSTRACT).

Keskitalo does not teach each frame and each message checked based on a set of cycle redundancy check bits generated. Alamara teaches each frame and each message checked based on a set of cycle redundancy check bits generated (see ABSTRACT). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Alamara to said device of Keskitalo in order to better prevent fading while receiving signals to form a message.

Referring to Claims 4, 5, and 23 Keskitalo does not teach each frame and each message checked based on a set of cycle redundancy check bits generated. Alamara teaches each frame and each message checked based on a set of cycle redundancy check bits generated (see ABSTRACT). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teachings of Alamara to said device of Keskitalo in order to better prevent fading while receiving signals to form a message.

---------- NEW CITATIONS ----------

NONE.